

Original Research Article

Histopathological Study and P53 Expression of Colonic Polyps

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Abstract

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Background: Hyperplastic and Adenomatous polyps are most common in large intestine. Morphological study of polyps helps us to know the incidence and malignant transformation of polyps.

Aims and Objectives: To study the incidence and morphology of colonic Polyps.

Materials and Methods: Prospective study, 52 colonic polyps were reported which include both colonoscopic biopsies (polypectomy) and resection specimens.

Observation and Results: The commonest site of involvement was sigmoid colon and the commonest lesion was adenomatous polyps.

Conclusion: Adenomatous polyps are more common in colon and further study are required to know the malignant transformation.

Keywords: FAP-Familial Adenomatous Polyposis; PJ Polyp-Peutz-Jeghers Polyp.

Introduction

Flexible sigmoidoscopy and colonoscopy reveal polypoid lesions, categorized as i, hamartomatous, epithelial or mesenchymal polyps. Large intestinal polyps have remained the predominant population with most of them being adenomatous polyps¹. malignant adenomatous polyp by definition shows malignant epithelium invading across muscularis mucosa [2,3,4].

Familial adenomatous polyposis is an autosomal dominant syndrome caused by a mutation of APC gene at chromosome 5q21. This is characterised by early onset of numerous colonic adenomas with an inevitable progression to colorectal carcinoma. If it is detected early and prophylactic resection of colon done as early as possible, can decrease

incidence and mortality from colorectal carcinomas.

Grossly, adenomas are classified as sessile or pedunculated. Microscopically, adenomas are categorized architecturally as tubular, tubulovillous or villous. By definition, all adenomas contain at least low-grade (mild) dysplasia. Dysplasia in adenomas is generally classified as low (mild, moderate) or high grade (severe, including carcinoma in situ) based on a combination of cytologic and architectural features.

Isolated juvenile polyps are the most common in the rectosigmoid colon (54%). However, 37% of patients have polyps proximal to the splenic flexure. In juvenile polyposis coli (polyps limited to the colon), polyps are most common in the rectosigmoid region and typically number up to 200.

Aims and Objectives

1. To study the incidence and morphology of colonic polyps from specimens received at Sree Balaji Medical College and Hospital, Chennai.
2. To analyze the incidence and morphological features of malignancies associated with colonic polyps.

Materials and Methods

A total of 52 specimens which were identified as polyps in the gastro-intestinal tract were studied at Sree Balaji Medical College and Hospital, Department of Pathology. The specimens included both endoscopic biopsies (polypectomy) and intestinal resection specimens.

Table 1: Distribution of Polyps in Large Intestine

Large Intestine	
No. of Cases (%)	52 (100%)
Commonest Site and Type	Left Colon / Adenomatous polyp

Table 2: Gi Polyps Distribution as per Age and Gender

Large Intestine	
Age Range	4 - 81 Years
Mean Age	47 Years
No. of Male Patients	29
No. of Female Patients	22
Male: Female Ratio	1.3 : 1

52 cases of large intestinal polyps reported which constitute 21 cases of non-neoplastic and 31 cases of

The specimens were collected along with relevant clinical details including age, sex, clinical presentation and family history of polyposis or GI cancers. The specimens were fixed using 10% Neutral Buffered Formalin and processed as for routine histopathological studies. H & E stain, special stains and immuno histochemistry was applied wherever necessary.

Observation And Results

The study conducted at Sree Balaji Medical College & Hospital in the department of Pathology during a period of 12 Months from February 2014 to February 2015. Total of 52 cases of colonic Polyps were studied Table 1.

Table 3: Non-Neoplastic and Neoplastic Polyps

Non-Neoplastic Polyps	Large Intestine
Hyperplastic Polyp	10
Inflammatory polyps	8
Peutz-Jeghers polyp	1
Juvenile Polyp	1
Fibro Epithelial Polyp	1
Total	21

Neoplastic Polyps	Large Intestine
Tubular adenoma	12
Villous Adenoma	6
Tubulo Villous Adenoma	10
Familial adenomatous polyp	1
Adenomatous polyp with adenocarcinoma	2
Total	31

neoplastic polyps. Most of the adenomatous polyps located at Colon 29 cases out of 52.

DISTRIBUTION OF POLYPS IN LARGE INTESTINE BASED ON SITE

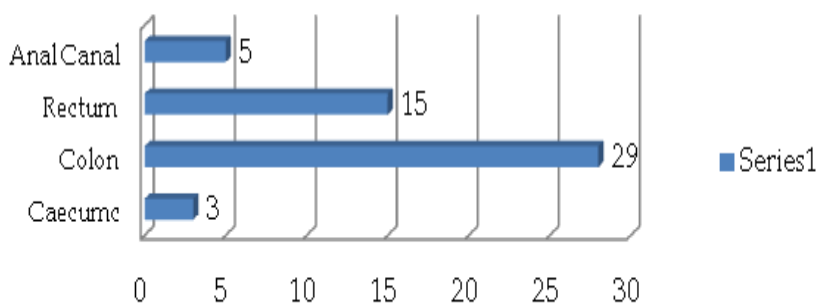


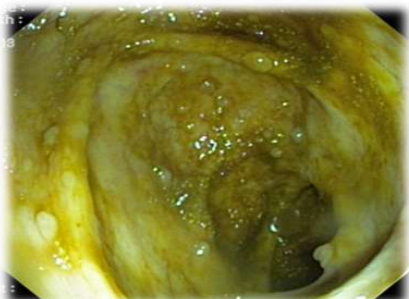
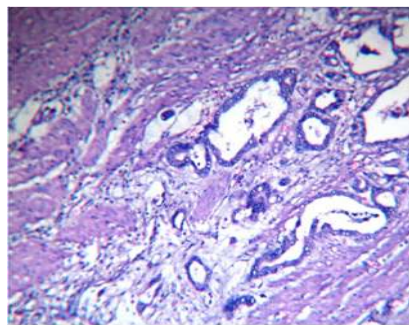
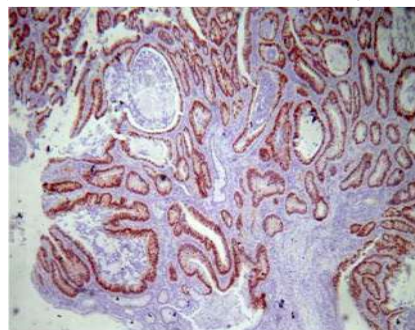
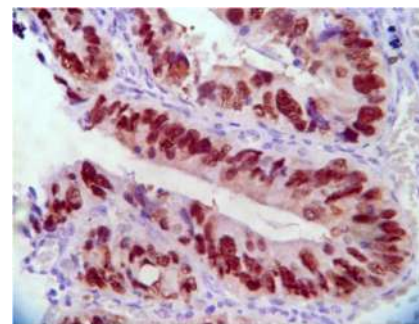
Chart 1: Distribution of Polyps in Large Intestine Based on Site

Table 4: Distribution of Polyps in Colon Based on Site and Histological Type

Histological Type	ASC	Transverse	Desc	Sig	No. of Cases		Malignant	Total
					Dysplasia			
					Mild	Mod		
Tubulous Adenoma	2		4	2				8
Villous Adenoma						1 (SIG)	1 (AC/SIG) + 2 (AC/DSC)	4
Tubulo Villous Adenoma	1		1	1	2 (DSC)		1 (AC/ASC) + 1 (AC/MF)	7
Hyperplastic Polyp	2			4				6
Inflammatory Polyp	1		1					2
Peutz-Jeghers Polyp	1							1
FAP	1							1
Total								29

Immunohistochemistry:**Table 5:** P53 Expression in Adenomatous Polyps

Neoplastic Polyps	Total	P53 Positive	P53 Negative
Tubular adenoma	12	5	7
Villous Adenoma	6	6	0
Tubulo Villous Adenoma	10	10	0
FAP	1	1	0
Adenomatous polyp with adenocarcinoma	2	2	0
Total	31	24	7

Familial Adenomatous Polyps of Colon:**Fig. 1:** Colonoscopy showing multiple polyps (Endoscopic Picture)**Fig. 2:** Multiple Colonic Polyps H & E 40x**P53 Expression in Adenomatous Polyp:****Fig. 3:** Adenomatous polyp showing strong positivity for p53. x10**Fig. 4:** p53 nuclear staining - strong positivity. x40

Expression of P53 is an good indicator of malignant changes of colonic polyps, Increased expression of P53 is helpful to identify high risk patients and for their treatment. P53 applied for 31 cases of adenomatous polyps in which 24 (77%) cases were positive, whereas 7 (23%) cases were negative. Expression of p53 more expressed in Adenomatous polyp with adenocarcinoma 2 (100%) cases, Familial adenomatous polyp 1

Table 6: Autopsy Bases Studies of Large Intestinal Polyps

Study	Place	Total no. of Cases	Predominant polyp	No (%) of total cases
Tony et al ⁸	India	124	Adenomatous Polyp	99 (79.8%)
Vatn MH ¹⁰	Oslo	445	Adenomatous polyp	329 (73.93)
Williams et al ⁶	Liverpool	843	Hyperplastic polyps	574 (68.1%)
Rickett RR ⁹	New Jersey	1023	Adenomatous polyps	658 (64.32%)
Jass JR et al ⁵	New Zealand	495	Hyperplastic polyps	252 (50.9%)
Lee YS ⁷	Singapore	1.014	Adenomatous polyps	170 (16.8%)

Table 7: Various Studies of Adenomas of Large Intestine

Author Location	Tubular adenoma	Tubulo-villous adenoma	Villous adenoma	(A)	(C)
Rahat N et al ¹¹ Karachi	10 (55.55%)	3 (16.67%)	5 (27.78%)	1 (5.6%)	18
Ali Zare Mirzaie et al ¹² Iran	121 (69.94%)	24 (13.87%)	28 (16.18%)	-	173
Nouraie et al ¹³ African American	3641 (86.57%)	414 (9.84%)	151 (3.59%)	-	4206
Tony J et al ¹⁰ India	67 (68%)	24 (24%)	14 (14%)	6 (6.06%)	99
A Khan et al ¹⁴ Canada	566 (65%)	225 (25.8%)	63 (7.2%)	12 (1.4%)	871
Present study India	12 (23%)	10 (19%)	6 (12%)	2 (4%)	52

(100%) followed by Tubulo villous adenoma 10 (100%), Villous adenoma 6 (100%) whereas Tubular adenoma 5 (42%).

Discussion

In large intestine, 52 cases seen, which include 21 cases of non-neoplastic polyps and 31 cases of neoplastic polyps. In a study by LeeYS et al. in Singapore on 1014 cases, 170 (16.8%) were found to be adenomatous polyps while the study by Rickett RR et al in New Jersey, USA showed an incidence of adenomatous polyps as 64.32%. Tony et al. conducted a study in 124 cases and found 99 (79.8%) cases of adenomatous polyps. In the present study, Large intestinal polyps 52 cases with most of them being adenomatous polyps 31, which correlates with the study by Lee YS et al.

The predominant population of colonic polyps in this study was formed by adenomatous polyps 31. Of these, tubular adenomas were 12 Followed by tubulo-villous adenoma 10, villous adenoma 6, adenomatous polyps with carcinoma 2 and FAP is 1.

(A) - polyps showing malignancy (invasion across muscularis mucosa)

(C) - total cases studied

The type distribution in this worldwide study as shown in table 7, tubular adenomas being the commonest followed by tubulovillous adenomas with the exception of two studies (Karachi and Iran) in which villous adenomas are more common than tubulovillous adenomas. In my study, tubular adenomas were more out of cases.

P53 nuclear stain applied for 31 cases of adenomatous polyps in which 24 cases were positive, whereas 7 cases were negative. Tubulo villous adenoma 10 cases showed more positive expression than villous adenoma 6 and Tubular

adenoma 5. One Familial adenomatous polyp 1 and 3 cases of adenomatous polyp with malignancy showed 100% expression, which is co-relate with Shanmugam et al study, who have studied the expression of p53 and bcl2 in normal colonic epithelium, contiguous colorectal adenomas and cancers and found that expression of p53 and Bcl-2 progressively increased from normal-appearing epithelium to adenomas to carcinomas. They also concluded that the presence of p53 in the adenomatous epithelium is an indicator of aggressive behavior of colonic lesions, and that these patients are more likely to develop aggressive invasive cancer [15,16].

Summary

- 52 cases of large-intestinal tract polyps were submitted for histopathological examination at Sree Balaji Medical College and Hospital.
- The age group ranged from 4 yrs to 81 yrs.
- A male predominance was noted.
- Maximum number of lesions were seen in the colon, especially left colon with the sigmoid colon being the commonest site.
- Adenomatous polyps constituted the bulk of large bowel polyps.
- Hyperplastic polyps were the second commonest.
- Among the adenomatous polyps, tubular adenomas and tubulovillous adenomas were more common than villous adenomas.
- Adenomatous polyps were seen in a wide age group of 22 yrs to 81yrs.
- 5 cases of adenomatous polyps showed malignant changes and 3 cases showed dysplastic changes.

- p53 applied for 31 cases of adenomatous polyps in which 24 cases were positive, whereas 7 cases were negative.

Conclusion

Polyps in the large intestinal tract may vary from asymptomatic incidental findings to invasive malignancies. Various investigatory modalities are being developed and available in developing countries for screening and diagnosis of these lesions. The morphology of the polyps are well defined to delineate them from one another. A careful study of adenomatous polyps is needed in view of potential for malignant transformation. This study finds a high incidence of colonic adenomatous polyps 29 cases out of 52 cases. Though surveillance programs have been framed, it is imperative to establish cost effective screening guidelines, so as to detect the lesions earlier. Genetic studies are needed to predict malignant transformation of adenomatous polyps.

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